REMARKS

Claims 1-22 are pending in this continuation-in-part application. By this response applicant amends independent claims 1, 8, and 14. Support for these amendments is found throughout the specification and they add no new matter. Exemplary support may be found in paragraphs 70, 71, 93, and 129. Attached hereto is a complete listing of all claims in the application, with their current status listed parenthetically.

Double Patenting

On pages 3-6 the Examiner provisionally rejects claims 1, 2, 3, 4, 7, and 17 in the present application (the '220 application)under the judicially created doctrine of obvious type double patenting in view of co-pending U.S. Patent Application Serial Nr. 10/465,644 (the '644 application). The applicant respectfully traverses this rejection. The following claim chart is provided for the Examiner's convenience.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
1. A method for correcting room acoustics at multiple-listener positions, the method comprising:	1. A method for correcting room acoustics at multiple-listener positions, the method comprising the steps of:
measuring a room acoustical response at each listener position in a multiple-listener environment;	measuring a <u>time domain</u> room acoustical response at each listener position in a multiple-listener environment,
	the room acoustical response including a loudspeaker response and a room response;

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
warping each of the room acoustical response measured at said each listener position;	
determining a general response by computing a weighted average of the <u>warped</u> room acoustical responses;	determining a general response by computing a weighted average of <u>time domain</u> the room acoustical responses; and
generating a low order spectral model of the general response;	
obtaining a <u>warped</u> acoustic correction filter from the <u>low order spectral model,</u> wherein the warped acoustic correction filter is the inverse of the low order spectral model; and	obtaining a <u>room</u> acoustic correction filter from the <u>general response</u>;
unwarping the warped acoustic correction filter to obtain a room acoustic correction filter;	
wherein the room acoustic correction filter corrects the room acoustics at the multiple-listener positions.	wherein the room acoustic correction filter <u>simultaneously</u> corrects the room acoustics <u>and loudspeaker</u> acoustics at the multiple-listener positions.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
2. The method of claim 1, further comprising generating a stimulus signal for measuring the room acoustical response at each of the listener positions.	2. The method according to claim 1, further including the step of generating a stimulus signal for measuring the room acoustical response at each of the listener positions.
	3. The method according to claim 2, further including the step of transmitting the stimulus signal from at least one loudspeaker.
	4. The method according to claim 3, wherein the stimulus signal is at least one of
	a logarithmic chirp signal,
	a broadband noise signal,
	a maximum length signal,
	or a white noise signal.
3. The method according to claim 1, wherein the general response is determined by a pattern recognition method.	5. The method according to claim 1, wherein the general response is determined by a pattern recognition method.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
4. The method of claim 3, wherein the pattern recognition method comprises a method selected from a group consisting of:	6. The method according to claim 5, wherein the pattern recognition method is at least one of
a hard c-means clustering method,	a hard c-means clustering method or
a fuzzy c-means clustering method,	a fuzzy c-means clustering method.
and an adaptive learning method.	
5. The method according to claim 1, wherein the warping is achieved by means of a bilinear conformal map.	
6. The method of claim 1, wherein the spectral model comprises a model selected from a group consisting of	
a Linear Predictive Coding (LPC) model and	
a pole-zero model.	
	7. The method according to claim 1, further including the step of determining a minimum-phase signal and
	an all-pass signal from the general response.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
	8. The method according to claim 7, further including the step of inverting the minimum-phase signal.
	9. The method according to claim 8, further including the step of determining a matched filter from the all-pass signal.
	10. The method according to claim 9, further including the step of filtering the matched filter output with the inverse of the minimum-phase signal to obtain the room acoustic correction filter.
7. The method according to claim 1, wherein the warped acoustic correction filter is the inverse of the low order spectral model.	11. The method according to claim 8, wherein the room acoustic correction filter response is the inverse of the minimum-phase signal.
8. A method for generating substantially distortion-free audio at multiple-listeners in an environment, the method comprising:	12. A method for generating substantially distortion-free audio at multiple-listeners in an environment, the method comprising <u>the steps of</u>:
measuring acoustical characteristics of the environment at each expected listener position in the multiple-listener environment;	measuring <u>time domain</u> acoustical characteristics of the environment at each expected listener position in the multiple-listener environment,

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
	the acoustical characteristics including a loudspeaker response and a room response;
warping each of the acoustical characteristics measured at said each expected listener position;	
generating a low order spectral model of each of the warped acoustical characteristics;	
obtaining a warped acoustic correction filter from the low order spectral model, wherein the warped acoustic correction filter is the inverse of the low order spectral model;	
unwarping the warped acoustic correction filter to obtain a room acoustic correction filter;	
	determining a room acoustical correction filter from the acoustical characteristics at said each of the expected listener position;
filtering an audio signal with the room acoustical correction filter; and	filtering an audio signal with the room acoustical correction filter; and

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
transmitting the filtered audio from at least one loudspeaker,	transmitting the filtered audio from at least one loudspeaker,
wherein the audio signal received at said each expected listener position is substantially free of distortions.	wherein the audio signal received at said each expected listener position is substantially free of distortions.
	13. The method according to claim 12, further including the step of generating a stimulus signal from at least one loudspeaker.
	14. The method according to claim 13, wherein the stimulus signal is at least one of
	a logarithmic chirp signal,
	a broadband noise signal,
	a maximum length signal,
	or a white noise signal.
9. The method of claim 8, further <u>comprising</u> determining a general response by a pattern recognition method.	15. The method according to claim 12, further <u>including the step of</u> determining a general response by a pattern recognition method.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
10. The method of claim 9, wherein the pattern recognition method comprises a method selected from a group consisting of:	16. The method according to claim 15, wherein the pattern recognition method is at least one of
a hard c-means clustering method,	a hard c-means clustering method or
a fuzzy c-means clustering method,	a fuzzy c-means clustering method.
and an adaptive learning method.	
11. The method of claim 8, wherein the warping is achieved by a bilinear conformal map.	
12. The method of claim 8, wherein the spectral model comprises a model selected from a group consisting of:	
a Linear Predictive Coding (LPC) model and	
a frequency weighted pole-zero model.	
	17. The method according to claim 15, further including the step of determining a minimum-phase signal and
	an all-pass signal from the general response.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
	18. The method according to claim 17, further including the step of inverting the minimum-phase signal.
	19. The method according to claim 18, further including the step of determining a matched filter from the all-pass signal.
	20. The method according to claim 19, further including the step of convolving the matched filter output with the inverse of the minimum-phase signal to obtain the room acoustic correction filter.
13. The method of claim 8, wherein the warped acoustic correction filter is the inverse of the general response.	21. The method according to claim 18, wherein the room acoustic correction filter response is the inverse of the minimum-phase signal.
	22. The method according to claim 16, wherein the fuzzy c-means clustering method generates at least one cluster centroid.
	23. The method according to claim 22, further including the step of forming the general response from the at least one cluster centroid.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
14. A system for generating substantially distortion-free audio at multiple-listeners in an environment, the system comprising:	24. A system for generating substantially distortion-free audio at multiple-listeners in an environment, the system comprising:
a filtering means for performing multiple-listener room acoustic correction,	a filtering means for performing multiple-listener room acoustic correction,
the filtering means formed from:	the filtering means formed from a weighted average of time domain room acoustical responses, and
(i) warped room acoustical responses,	
wherein the room acoustical responses are measured at each of an expected listener position in a multiple-listener environment;	wherein each of the room acoustical responses is measured at an expected listener position in a multiple-listener environment,
	the room acoustical response including a loudspeaker response and a room response;
	wherein an audio signal,
	filtered by the room acoustic correction filtering means,
	is received substantially distortion-free at each of the expected listener positions.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
(ii) a weighted average response of the warped room acoustical responses;	
(iii) a low order spectral model of the weighted average response;	
(iv) a warped filter formed from the low order spectral model, wherein the warped filter is the inverse of the low order spectral model; and	
(v) an unwarped room acoustic correction filter obtained by unwarping the warped filter;	
wherein an audio signal,	
filtered by the filtering means comprised of the room acoustic correction filter,	
is received substantially distortion-free at each of the expected listener positions; and	
a means for transmitting the audio signal.	

Pending Claims as of 12/20/07 for USSN 10/700,220	Pending Claims as of 03/18/2008 for USSN 10/465,644
	25. The system according to claim 24, further including a stimulus signal generating means, said stimulus signal being used for measuring the acoustical characteristics at said each of the expected listener position.
	26. The system according to claim 25, wherein at least one of the stimulus signal and the filtered audio signal is transmitted from at least one loudspeaker.
	27. The system according to claim 26, wherein the stimulus signal is at least one of
	a logarithmic chirp signal,
	a broadband noise signal,
	a maximum length signal,
	or a white noise signal.
15. The system of claim 14, wherein the weighted average <u>response</u> is determined by a pattern recognition means.	28. The system according to claim 24, wherein the weighted average is determined by a pattern recognition means.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
16. The system of claim 15, wherein the pattern recognition means comprises a means selected from a group consisting of	29. The system according to claim 28, wherein the pattern recognition means is at least one of
a hard c-means clustering system,	a hard c-means clustering system or
a fuzzy c-means clustering system,	a fuzzy c-means clustering method.
and an adaptive learning system.	
	30. The system according to claim 24, wherein at least one of a minimum-phase signal and an all-pass signal is generated from the weighted average.
	31. The system according to claim 30, wherein the room acoustical correction filtering means includes an inverse of the minimum-phase signal.
17. The system of claim 14, wherein the warping is achieved by an all-pass filter chain.	32. The system according to claim 31, wherein a matched filter is obtained from the all-pass signal.
	33. The system according to claim 32, wherein the room acoustic correction filtering means is obtained by filtering the matched filter output with the inverse of the minimum-phase signal.

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
	34. The system according to claim 31, wherein filtering each of the acoustical responses with the room acoustical correction filter provides a substantially flat magnitude response at each of the expected listener positions.
	35. The system according to claim 29, wherein the fuzzy c-means clustering system generates at least one cluster centroid.
	36. The system according to claim 35, wherein the weighted average is determined from the at least one cluster centroid.
18. The system of claim 14, wherein the warped filter includes an inverse of the lower order spectral model.	
19. The system of claim 14, wherein the spectral model comprises a model selected from a group consisting of	
a Linear Predictive Coding (LPC) model and	
a frequency weighted pole-zero model.	

Pending Claims as of 12/20/07 for USSN 10/700,220	**Pending Claims as of 03/18/2008 for USSN 10/465,644**
20. A method for correcting room acoustics at multiple-listener positions, the method comprising:	37. A method for correcting room acoustics at multiple-listener positions, the method comprising the <u>steps</u> of:
warping each room acoustical response,	
said each room acoustical response obtained at each expected listener position;	
clustering each of the <u>warped</u> room acoustical response into at least one cluster,	clustering each room acoustical response into at least one cluster,
wherein each cluster includes a centroid;	wherein each cluster includes a centroid;
forming a general response from the at least one centroid;	forming a general response from the at least one centroid,
	the general response determined in the time domain; and
inverting the general response to obtain an inverse response;	
obtaining a lower order spectral model of the inverse response;	
	determining a room acoustic correction filter from the general response;

Pending Claims as of 12/20/07 for USSN 10/700,220	Pending Claims as of 03/18/2008 for USSN 10/465,644
unwarping the lower order spectral model of the inverse response to form the room acoustic correction filter;	
wherein the room acoustic correction filter corrects the room acoustics at the multiple-listener positions.	wherein the room acoustic correction filter corrects the room acoustics at the multiple-listener positions.
21. The method of claim 20, wherein the warping is achieved by a bilinear conformal map.	
22. The method of claim 21, wherein the spectral model comprises a frequency weighted pole-zero model.	
	38. The method according to claim 37, further including the step of determining a stable inverse of the general response, said stable inverse being included in the room acoustic correction filter.
	39. Cancelled
	40. A method for correcting room acoustics at multiple-listener positions, the method comprising the steps of:

Pending Claims as of 12/20/07 for USSN 10/700,220	Pending Claims as of 03/18/2008 for USSN 10/465,644
	determining a general response by computing a weighted average of room acoustical responses in the time domain, wherein each room acoustical response corresponds to a sound propagation characteristics from a loudspeaker to a listener position; and
	obtaining a room acoustic correction filter from the general response;
	wherein the room acoustic correction filter corrects the room acoustics at the multiple-listener positions.
	41. The method according to claim 40, further including the step of generating a stimulus signal for measuring the room acoustical response at each of the listener position.
	42. The system according to claim 40, wherein the general response is determined by at least one of
	a hard c-means clustering system
	or a fuzzy c-means clustering method.

Pending Claims as of 12/20/07 for USSN 10/700,220	Pending Claims as of 03/18/2008 for USSN 10/465,644
	43. A system for generating substantially distortion-free audio at multiple-listeners in an environment, the system comprising:
	a filtering means for performing multiple-listener room acoustic correction, the filtering means formed from a weighted average of time domain room acoustical responses, the weighted average computed in the time domain, and wherein each of the room acoustical responses is measured at an expected listener position in a multiple-listener environment;
	wherein an audio signal, filtered by the room acoustic correction filtering means, is received substantially distortion-free at each of the expected listener positions.

As to claim 1 the Examiner states:

> "Relative to both claims 1, the '220 claim 1 is a broader recitation of the same invention claimed in '644 claim 1. Therefore, '644 claim 1 is encompassed by '220 claim 1. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing licensing fees to two different parties."

With respect to the scope of the claims, it is important to note that the two claims are of different scope. Each claim contains limitations simply not present in the other, therefore neither claim is encompassed within the scope of the other. For example, '220 claim 1 is limited by the recitation "warping each of the room acoustical response measured at said each listener position;" claim 1 of the '644 contains no such limitation. In this regard, '644 claim 1 is not encompassed by '220 claim 1. Further, claim 1 of the '220 application is limited to "determining a general response by computing a weighted average of the warped room acoustical responses" whereas claim 1 of the '664 application is limited to "determining a general response by computing a weighted average of time domain the room acoustical responses;". With respect to this element, neither claim is encompassed within the other. Additionally, claim 1 of the '220 application is limited to "generating a low order spectral model of the general response;" where claim 1 of the '644 application contains no such limitation. Still further, claim 1 of the '220 application is limited to "obtaining a warped acoustic correction filter from the low order spectral model;" and claim 1 of the '664 application is limited to "obtaining a room acoustic correction filter from the general response;". Additionally claim 1 of the '220 application is limited to "unwarping the warped acoustic correction filter to obtain a room acoustic correction filter;" where claim 1 of the '644 application contains no such limitation. Lastly, claim 1 of the '220 application is limited to "wherein the room acoustic correction filter corrects the room acoustics at the multiple-listener positions." where claim 1 of the '644 application is limited to "wherein the room acoustic correction filter simultaneously corrects the room acoustics and loudspeaker acoustics at the multiple-listener positions."

Clearly, these claims are not encompassed within each other in any manner. Applicant submits that these claims are patently distinct and the Examiner's provisional double patenting rejection is traversed. Applicant respectfully requests the Examiner reconsider and withdraw this provisional rejection.

As to claim 2 the Examiner states:

> “The ‘220 claim 2 is a broader recitation of the same invention claimed in ‘644 claim 2. Therefore, ‘644 claim 2 is encompassed by ‘220 claim 2. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing licensing fees to two different parties.”

With respect to claim 2 of the ‘220 application and to claim 2 of the ‘644 application, both claims are dependent from their respective independent claims 1. For the above noted reasons the claims are patently distinct. The Examiner is respectfully reminded that "[i]f an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious." M.P.E.P. § 2143.03. Applicant submits that these claims are patently distinct and the Examiner’s provisional double patenting rejection is traversed. Applicant respectfully requests the Examiner reconsider and withdraw this provisional rejection.

As to claim 3 the Examiner states:

> “The ‘220 claim 3 is a broader recitation of the same invention claimed in ‘644 claim 5. Therefore, ‘644 claim 5 is encompassed by ‘220 claim 3. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing licensing fees to two different parties.”

With respect to claim 3 of the ‘220 application and to claim 5 of the ‘644 application, both claims are dependent from their respective independent claims 1. For the above noted reasons the claims are patently distinct. The Examiner is respectfully reminded that "[i]f an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious." M.P.E.P. § 2143.03. Applicant submits

that these claims are patently distinct and the Examiner's provisional double patenting rejection is traversed. Applicant respectfully requests the Examiner reconsider and withdraw this provisional rejection.

As to claim 4 the Examiner states:

> "The '220 claim 4 is a broader recitation of the same invention claimed in '644 claim 6. Therefore, '644 claim 6 is encompassed by '220 claim 4. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing licensing fees to two different parties."

With respect to claim 4 of the '220 application and to claim 6 of the '644 application, both claims are dependent from dependent claims 3 and 5 respectively, both of which are dependent from their respective claims 1. For the above noted reasons the claims are patently distinct. The Examiner is respectfully reminded that "[i]f an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious." M.P.E.P. § 2143.03. Applicant submits that these claims are patently distinct and the Examiner's provisional double patenting rejection is traversed. Applicant respectfully requests the Examiner reconsider and withdraw this provisional rejection.

As to claim 7 the Examiner states:

> "The '220 claim 7 is a broader recitation of the same invention claimed in '644 claim 11. Therefore, '644 claim 11 is encompassed by '220 claim 7. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing licensing fees to two different parties."

With respect to claim 7 of the '220 application and to claim 11 of the '644 application, claim 7 of the '220 is dependent from its independent claim 1 and includes the further limitation "wherein the warped acoustic correction filter is the inverse of the low order spectral model" whereas claim 11 of the '644 is dependent from its claim 1 through dependent claims 7 and 8. For the above noted reasons the claims are patently distinct. The Examiner is respectfully reminded that "[i]f an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious." M.P.E.P. § 2143.03. Applicant submits that these claims are patently distinct and the Examiner's provisional double patenting rejection is traversed. Applicant respectfully requests the Examiner reconsider and withdraw this provisional rejection.

As to claim 17 the Examiner states:

> "The '220 claim 7 is a broader recitation of the same invention claimed in '644 claim 11. Therefore, '644 claim 11 is encompassed by '220 claim 7. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing licensing fees to two different parties."

With respect to claim 17 of the '220 application and to claim 7 of the '644 application, claim 17, dependent from independent claim 14, of the '220 contains many limitations simply not found in claim 7 of the '644 application. In like manner claim 7, dependent from independent claim 1, of the '644 application contains many limitations not present in claim 17 of the '220 application. For example, claim 14 of the '220 is limited to "(i) warped room acoustical responses, wherein the room acoustical responses <u>are</u> measured at each <u>of</u> an expected listener position in a multiple-listener environment"; "(ii) a weighted average response of the warped room acoustical responses"; "(iii) a low order spectral model of the weighted average response"; "(iv) a warped filter formed

from the low order spectral model"; and "(v) an unwarped room acoustic correction filter obtained by unwarping the warped filter". At a minimum these limitations are simply not present in claim 1 of the '644 application. Further, claim 1 of the '644 application contains the limitations "measuring a time domain room acoustical response at each listener position in a multiple-listener environment, the room acoustical response including a loudspeaker response and a room response"; determining a general response by computing a weighted average of time domain the room acoustical responses"; and "obtaining a room acoustic correction filter from the general response wherein the room acoustic correction filter simultaneously corrects the room acoustics and loudspeaker acoustics at the multiple-listener positions" which are simply not present in claim 14 of the '220 application.

The Examiner is respectfully reminded that "[i]f an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious." M.P.E.P. § 2143.03. Since '220 application dependent claim 17 depends from independent claim 14 and '664 application dependent claim 7 depends from independent claim 1, the two are patently distinct by virtue of their dependency. Applicant submits that these claims are patently distinct and the Examiner's provisional double patenting rejection is traversed. Applicant respectfully requests the Examiner reconsider and withdraw this provisional rejection.

Rejection Under 35 U.S.C. § 103

In the Office Action, claims 1, 8, 14, and 20 stand rejected as unpatentable under 35 U.S.C. § 103(a) over U.S. Patent Nr. 6, 072, 877 ("Abel") in view of U.S. Patent Nr. 5,771,294 ("Inoue"). As discussed below, the Applicant respectfully traverses this rejection.

The Law of Obviousness

M.P.E.P. 706.02(j) states:

> "35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more references. After indicating that the rejection is under 35 U.S.C. 103, the Examiner should set forth in the Office Action:
>
> (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,
>
> (B) the difference or differences in the claim over the applied reference(s),
>
> (C) the proposed modification of the applied reference(s) to arrive at the claimed subject matter, and
>
> (D) an explanation >as to< why > the claimed invention would have been obvious to< one of ordinary skill in the art at the time the invention was made**."

See also M.P.E.P. 2143.03 which states:

"All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson* 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103 then any claim depending therefrom is nonobvious. *In re Fine* 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Additionally, as stated in the Office Action, the factual inquiries set forth in Graham v. John Deere Co.. 383 U.S. 1, 148 USPQ 145 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or non-obviousness.

<u>The Examiner's characterization of the scope and contents of the art are erroneous.</u>

In rejecting claim 1 the Examiner states:

> "Abel discloses a method for correcting room acoustics by warping each of the room acoustical response measured at said each listener position (<u>fig. 7a: 121</u>); determining a general response by computing a weighted average of the warped room acoustical responses at multiple-listener positions (<u>fig. 10: 74; col. 10, lines 11-14</u>), generating a low order spectral model of the general response (<u>fig. 10: 74; col. 30-36</u>); obtaining a warped acoustic correction filter from the low order spectral model (<u>fig. 10:75)</u> unwarping (fir. 7a: 121) the warped acoustic correction filter."

At a minimum this is a mischaracterization of the elements "determining a general response by computing a weighted average of the warped room acoustical responses at multiple-listener positions"; "generating a low order spectral model of the general response" and "obtaining a warped acoustic correction filter from the low order spectral model". Abel (<u>fig. 10: 74; col. 10, lines 11-14</u>) states "[w]hen the equalization filter [74] is formed as a weighted average of HRTFs, the weighting should give more importance to longer more complex HRTFs" which the Examiner equates to a general response. Without prejudice to the propriety of this characterization, Abel then teaches that "[a]n input audio signal 73 is applied to an equalizing filter 74 and imaging filter 75 whose transfer function is determined by the applied interpolated equalized HRTF parameters. . . . The filter 75 provides for spatialized audio output suitable for application to one channel of a headphone." [Abel 9: 44-51; FIG. 10] The Examiner's attention is further directed to FIG. 10 which illustrates the output of imaging filter 75

going to headphone 77. Imaging filter 75 is therefore not a low order spectral model from which a warped acoustic correction filter is obtained. This is neither taught, suggested, or implied in Abel.

Further, employing common sense, one of ordinary skill in the art would not be motivated to modify the Abel reference to arrive at the asserted portions of the present invention because the reference does not teach "determining a general response by computing a weighted average of the <u>warped</u> room acoustical responses;" which the Examiner erroneously equates to equalizer 74; "generating a low order spectral model of the general response;" which the Examiner additionally equates to equalizer 74; and "obtaining a <u>warped</u> acoustic correction filter from the <u>low order spectral model,</u> wherein the warped acoustic correction filter is the inverse of the low order spectral model" which the Examiner equates to image filter 75. Abel does teach reducing the length of Head Related Transfer Functions by down sampling (FIG. 4a, 7:43-49) and deriving equalizer 74 from weighted averages of Head Related Transfer Functions (10:12-15). These simply are not the same thing.

Additionally, independent claims 1 and 8, as amended, include the limitation "wherein the warped acoustic correction filter is the inverse of the low order spectral model" and independent claim 14 includes the limitation "wherein the warped filter is the inverse of the low order spectral model", which are neither taught suggested nor implied by the Abel reference.

The addition of the Inoue reference fails to correct this deficiency.

<u>The Examiner has mischaracterized of the differences between the claims and the prior art are erroneous.</u>

With the mischaracterization of the Abel reference the Examiner asserts that it teaches elements that are simply not present either explicitly or implicitly.

<u>The proposed combination of the applied reference(s) does not arrive at the claimed subject matter</u>.

Without prejudice to the propriety of combining Abel with Inoue, the proposed combination, for at least the above reasons does not arrive at the claimed subject matter. Stated more explicitly, the proposed combination fails to teach, suggest or imply "determining a general response by computing a weighted average of the warped room acoustical responses at multiple-listener positions"; "generating a low order spectral model of the general response"; and "obtaining a warped acoustic correction filter from the low order spectral model".

Further, the Examiner has not provided any analysis on how one of ordinary skill using these two references would add the missing elements of the claims. It is respectfully submitted that the rejection is traversed. The Examiner is invited to reconsider and withdraw the rejection to this claim.

The Examiner rejects claims 8 and 14 as obvious over this same combination of references. The Examiner states "Claim 8 has been analyzed and rejected according to claim 1. Claim 14, has been analyzed and rejected according to claim 1." Applicant submits that claims 8 and 14 contain similar limitations to claim 1 and for the same reasons described above these claims are patently distinct from the proposed combination of references. Applicant respectfully requests the Examiner reconsider and withdraw these rejections.

On page 9 of the Office Action the Examiner rejects claim 20 based on this same proposed combination of Abel and Inoue. For the above reasons, claim 20 is additionally patently distinct. Additionally in this rejection the Examiner equates "clustering" with averaging and equates the limitation "wherein each cluster includes a centroid;" to averaging. Applicant submits that this characterization is unfounded and erroneous. If the Examiner maintains this rejection, Applicant requests the Examiner

provide a reference teaching that one of ordinary skill would equate averaging to clustering or to a centroid. The Examiner's reconsideration and withdraw of the rejection is requested.

On page 10 of the Office Action claim 2 is rejected under 35 U.S.C. 103(a) as obvious over Abel in view of Inoue in further view of U.S. Patent Nr. 6,118,875 (Moller). The Examiner states "the combined teachings of Abel and Inoue et al disclose the method of claim 1, but fails to disclose . . ." As noted above the proposed combination of Abel and Inoue fails to teach the method of claim 1. The addition of the Moller reference fails to correct the deficiency. Applicant submits that this rejection is traversed and the Examiner is invited to reconsider and withdraw this rejection.

On page 10 of the Office Action claims 3-4, 9-10, and 15-16 are rejected under 35 U.S.C. 103(a) as obvious over Abel and Inoue in view of U.S. Patent Publication 2003/0200236 A1 (Hong). The Examiner states "the combined teachings of Abel and Inoue et al disclose the method of claim 1, but fails to disclose . . ." As noted above the proposed combination of Abel and Inoue fails to teach the method of claim 1. The addition of the Hong reference fails to correct the deficiency. With respect to claims 9 and 15 the Examiner states "Claim 9 has been analyzed and rejected according to claim 3"; and "Claim 15 has been analyzed and rejected according to claim 3." Applicant submits that claims 9 and 15 contain similar limitations to claim 3 and are patently distinct for the same reasons. With respect to claims 4, 10, and 16 it is submitted that they are distinct by virtue of their dependency from claims 3, 9, and 15 respectively.

On page 12 of the Office Action claims 5, 11, 17, and 21 are rejected under 35 U.S.C. 103(a) as obvious over Abel and Inoue in view of U.S. Patent Nr. 6,980,655 (Kates). The Examiner states "the combined teachings of Abel and Inoue et al disclose the method according to claim 1, but fails to teach . . ." As noted above the proposed combination of Abel and Inoue fails to teach the method of claim 1. The addition of the

Kates reference fails to correct the deficiency. With respect to claims 11, 17, and 21 the Examiner states "Claim 11 has been analyzed and rejected according to claim 5"; "Claim 17 has been analyzed and rejected according to claim 5"; and "Claim 21 has been analyzed and rejected according to claim 5". Applicant submits that claims 11, 17 and 21 contain similar limitations to claim 5 and are patently distinct for the same reasons.

On page 12 of the Office Action claims 6, 12, and 19 are rejected under 35 U.S.C. 103(a) as obvious over Abel and Inoue in view of Kates in further view of U.S. Patent Nr. 6,956,955 (Brungart). The Examiner states "the combined teachings of Abel and Inoue et al disclose the method according to claim 1, but fails to teach . . ." As noted above the proposed combination of Abel and Inoue fails to teach the method of claim 1. The addition of the Kates and Brungart references fails to correct the deficiency. With respect to claims 12, and 19 the Examiner states "Claim 12 has been analyzed and rejected according to claim 6" and "Claim 19 has been analyzed and rejected according to claim 6". Applicant submits that claims 11, 17 and 21 contain similar limitations to claim 6 and are patently distinct for the same reasons.

On page 13 of the Office Action claims 7, 13, and 18 are rejected under 35 U.S.C. 103(a) as obvious over Abel and Inoue in view of Kates. The Examiner states The Examiner states "the combined teachings of Abel and Inoue et al disclose the method according to claim 1, but fails to teach . . ." As noted above the proposed combination of Abel and Inoue fails to teach the method of claim 1. The addition of the Kates. With respect to claims 13, and 18 the Examiner states "Claim 13 has been analyzed and rejected according to claim 7" and "Claim 18 has been analyzed and rejected according to claim 7". Applicant submits that claims 13 and 18 contain similar limitations to claim 7 and are patently distinct for the same reasons.

On page 14 of the Office Action the Examiner states "Claim 22 has been analyzed and rejected according to claims 5 and 6." Applicant notes that claim 22 is

dependent on from independent claim 20 and patentable at least for the reasons described above.

Conclusion

Applicant believes that this Response has addressed all items in the Office Action and now places the application in condition for allowance. accordingly, favorable reconsideration and allowance of claims 1-22 is solicited. Should any issues remain unresolved, the Examiner is invited to telephone the undersigned.

Respectfully submitted,
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